

YAMAHA KX-R470

Natural Sound Stereo Cassette Deck



WARNING
To reduce the risk of electric shock, do not open the rear cover of the unit.

Read the instructions. — All the safety and operating instructions should be read before the appliance is operated.
Follow instructions. — The safety and operating instructions should be retained for future reference.
Heed warnings. — All warnings on the appliance and in the operating instructions should be adhered to.
Follow instructions. — All operating and other instructions should be followed.
Water and moisture. — The appliance should not be used near water — for example, near a bathtub, sink, washbasin, kitchen sink, laundry tub, a wet basement, or near swimming pool, etc.
Cats and stands. — The appliance should be used only with a cat or stand that is recommended by the manufacturer.

OWNER'S MANUAL

IMPORTANT

Please record the serial number of your unit in the space below.

Model: **KX-R470**

Serial No:

The serial number is located on the rear of the unit.

Retain this Owner's Manual in a safe place for future reference.



Thank you for purchasing the YAMAHA KX-R470 stereo cassette deck.

SAFETY INSTRUCTIONS



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK) NO USER-SERVICEABLE PARTS INSIDE, REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

• Explanation of Graphical Symbols



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert you to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert you to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING

To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

1 Read Instructions — All the safety and operating instructions should be read before the appliance is operated.

2 Retain Instructions — The safety and operating instructions should be retained for future reference.

3 Heed Warnings — All warnings on the appliance and in the operating instructions should be adhered to.

4 Follow Instructions — All operating and other instructions should be followed.

5 Water and Moisture — The appliance should not be used near water — for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near swimming pool, etc.

6 Carts and Stands — The appliance should be used only with a cart or stand that is recommended by the manufacturer.

6A An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.



7 Wall or Ceiling Mounting — The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.

8 Ventilation — The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug or similar surfaced that may block the ventilation openings: or placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

9 Heat — The appliance should be situated away from heat sources such as radiators, stoves, or other appliances that produce heat.

10 Power Sources — The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

11 Power-Cord Protection — Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying receptacles, and the point where they exit from the appliance.

12 Cleaning — The appliance should be cleaned only as recommended by the manufacturer.

13 Non use Periods — The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.

14 Object and Liquid Entry — Care should be taken so that objects do not fall into and liquids not spilled into the inside of the appliance.

15 Damage Requiring Service — The appliance should be serviced by qualified service personnel when:

- A. The power-supply cord or the plug has been damaged; or
- B. Objects have fallen, or liquid has been spilled into the appliance; or
- C. The appliance has been exposed to rain; or
- D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
- E. The appliance has been dropped, or the cabinet damaged.

16 Servicing — The user should not attempt to service the appliance beyond those means described in the operating instructions. All other servicing should be referred to qualified service personnel.

17 Grounding or Polarization — The precautions should be taken so that the grounding or polarization of an appliance is not defeated.

We Want You Listening For A Lifetime

YAMAHA and the Electronic Industries Association's Consumer Electronics Group want you to get the most out of your equipment by playing it at a safe level.

One that lets the sound come through loud and clear without annoying blaring or distortion — and, most importantly, without affecting your sensitive hearing. Since hearing damage from loud sounds is often undetectable until it is too late, YAMAHA and the Electronic Industries Association's Consumer Electronics Group recommend you avoid prolonged exposure to excessive volume levels.



CAUTION: READ THIS BEFORE OPERATING YOUR UNIT.

FCC INFORMATION (U.S.A.)

1. IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT!

This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.

2. IMPORTANT: When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product **MUST** be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.

3. NOTE: This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices. Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures:

Relocate either this product or the device that is being affected by the interference.

Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter/s.

In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to coaxial type cable.

If these corrective measures do not produce satisfactory results, please contact your local retailer authorized to distribute this type of product. If you can not locate the appropriate retailer, please contact Yamaha Electronics Corp., U.S.A. 6600 Orangethorpe Ave, Buena Park, CA90620

The above statements apply **ONLY** to those products distributed by Yamaha Corporation of America or its subsidiaries.

Please check the copyright laws in your country to record from records, compact discs, radio, etc. Recording of copyright material may infringe copyright laws.

1. This unit is a sophisticated stereo cassette deck. To ensure proper operation for the best possible performance, please read this manual carefully.
2. Choose the installation location of your unit carefully. Avoid placing it in direct sunlight or close to source of heat. Also avoid locations subject to vibration and excessive dust, heat, cold or moisture. Keep it away from sources of hum such as transformers or motors.
3. Do not open the cabinet as this may result in damage to the deck or electrical shock. If a foreign object should get into the deck, contact your local dealer.
4. When removing the power plug from the wall outlet, always pull directly on the plug; never pull the cord itself.
5. Do not apply excessive force when operating switches and knobs.
6. When moving the deck, be sure to first pull out the power plug and remove all cords connecting the deck to other equipment.
7. Do not attempt to clean this unit with chemical solvents as this may damage the finish. Use a clean, dry cloth.
8. Never allow metallic items (e.g. screwdrivers, tools, etc.) to come near the record/playback head assembly. Doing so may not only scratch or damage the head's mirror-smooth finish, it may also change the magnetic characteristics of the heads, causing a deterioration in reproduction quality.
9. Although the record/playback head used in this unit is a high quality head with outstanding reproduction characteristics, it can become dirty through the use of old tapes or from dust accumulation over time. This can have a serious effect on reproduction quality. Clean the heads regularly with one of the commonly available head cleaners or with cleaning solutions as explained later in this manual.
10. Be sure to read the "Troubleshooting" section of this manual for advice on common operating errors before concluding that your unit is faulty.
11. Keep this manual in a safe place for future reference.
12. **Voltage Selector (General model only)**
The voltage selector on the rear panel of this unit must be set for your local mains voltage **BEFORE** plugging in the AC mains supply.

Special Instructions for Canada Model

THIS DIGITAL APPARATUS DOES NOT EXCEED THE "CLASS B" LIMITS FOR RADIO NOISE EMISSIONS FROM DIGITAL APPARATUS SET OUT IN THE RADIO INTERFERENCE REGULATION OF THE CANADIAN DEPARTMENT OF COMMUNICATIONS.

CAUTION: TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

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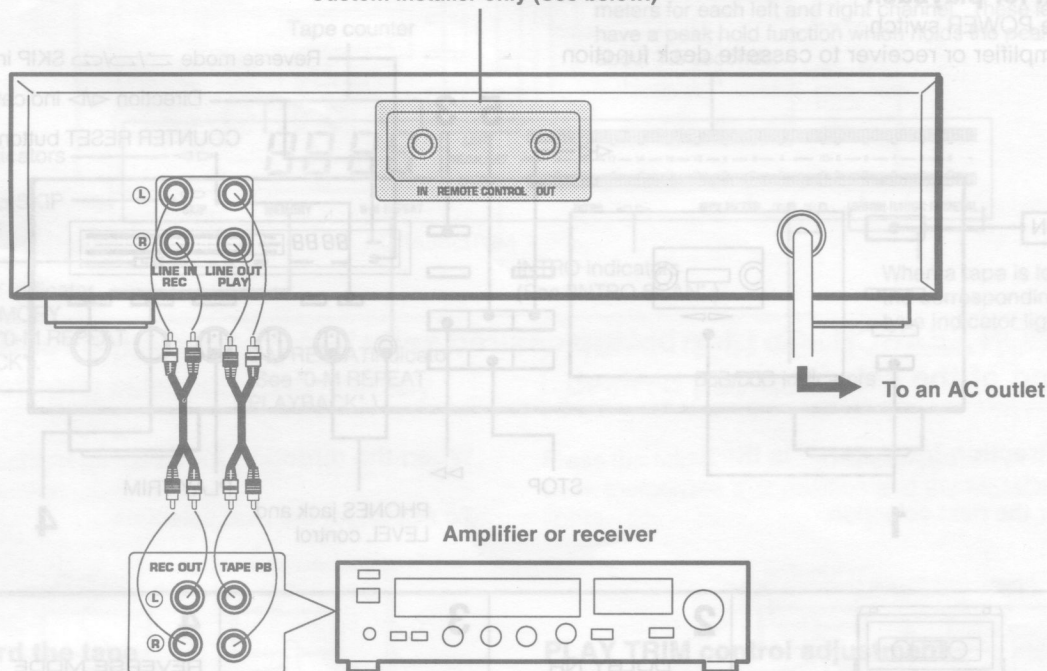
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FEATURES

- Secure Holding Damper Cassette Stabilizer allows you to reduce unwanted vibration and modulation noise.
- Dolby HX Pro Dynamic Bias Servo
- Dolby B/C Noise Reduction
- Fine Adjustment of Recording Bias with Bias Adjust Control allows you to compensate the high frequency sound to your liking.
- Play Trim Control for Improved Playback Compatibility with Other Decks
- 0-M Repeat Play, Memory Stop, Selection Search and Bi-Directional Intro Scan
- Auto Reverse function
- Recording Mute Function
- Rec Return/0-stop Function
- Timer Recording/playback
- Integrated System Remote Control Compatibility

CONNECTIONS

Custom Installer only (See below.)



REAR PANEL CONNECTIONS

Make sure that power to both the deck and your amplifier/receiver are turned off before making any connection.

- The White plug on the paired connecting cables corresponds to the Left channel and the Red plug corresponds to the Right channel. Make sure that the left and right channel connections are properly made, and that the plugs are inserted firmly.
- The LINE OUT/PLAY jacks on the deck should be connected to the Tape PB (Playback/Input) jacks on your amplifier/receiver, and the LINE IN/REC jacks on the deck should be connected to the Rec Out (Rec/Output) jacks on your amplifier/receiver.
- Connect the power cord to an AC wall outlet or to an AC outlet on the rear panel of your amplifier/receiver (if provided).

For Custom Installer (USA and Canada model)

The REMOTE IN and OUT jacks are used for Custom Installation System. When this deck is connected to the components with Custom Installation System, you can operate this deck with the system remote control.

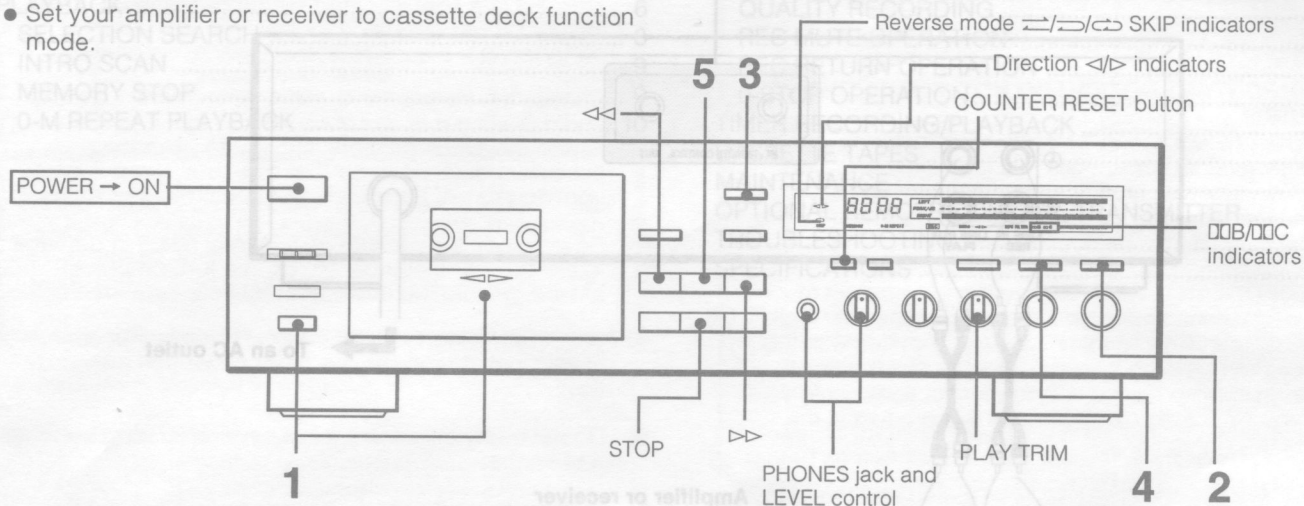
- Connect the REMOTE IN jack to the EMITTER terminals (FROM INDEPENDENT ZONE, FROM ALL ZONE or FROM SELECTED ZONE) of the YAMAHA Master Zone Controller MCX-10.

By connecting the REMOTE CONTROL OUT jack to the REMOTE CONTROL IN jack of the other component, you can also operate it with the system remote control. In this way, up to 6 components can be connected in series.

PLAYBACK

Preparation for playback

- Turn on the POWER switch.
- Set your amplifier or receiver to cassette deck function mode.



<p>1</p> <p>EJECT</p> <p>Insert the cassette with the exposed tape side facing down. (The side facing you is called the forward side and the opposite side is called the reverse side.) To close the compartment, push in the compartment door until it locks shut.</p>	<p>2</p> <p>DOLBY NR OFF/DOLBY B/C/MPX</p> <p>Refer to the description below.</p>	<p>3</p> <p>DIRECTION</p> <p>Select the tape running direction. Each time this button is pressed, the tape running direction changes between forward (▶) and reverse (◀) and the corresponding indicator lights on the display.</p>	<p>4</p> <p>REVERSE MODE SKIP/REVERSE/REVERSE</p> <p>Refer to the description below.</p>	<p>5</p> <p>PLAY</p>
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DOLBY NR button setting (in step 2)

Be sure to set the DOLBY NR button according to the system used for recording. Each time this button is pressed, Dolby NR switches to DOLBY B (MPX OFF), to DOLBY C (MPX OFF), to DOLBY B MPX ON, to DOLBY C MPX ON, to OFF and back around to DOLBY B (MPX OFF).

For a tape recorded with DOLBY B NR (even for a tape recorded with DOLBY B NR and MPX ON):

Press this button so that only the DOLBY B indicator lights.

For a tape recorded with DOLBY C NR (even for a tape recorded with DOLBY C NR and MPX ON):

Press this button so that only the DOLBY C indicator lights.

For a tape recorded with DOLBY NR OFF:

Set this button so that no indicator lights.

Note: The MPX filter settings are explained on page 11.

* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

REVERSE MODE selector setting (in step 4)

The auto reverse function allows the tape running direction to be reversed automatically.

Each time this selector is pressed, the setting changes to ▶, to ◀ SKIP, to ◀ and back around to ▶. Select the desired mode.

▶: When playback or fast forwarding (or rewinding) of one side of a tape is finished, the deck stops at the end of the tape.

◀: Both sides of the tape are played back and the deck stops at the end of the reverse side.

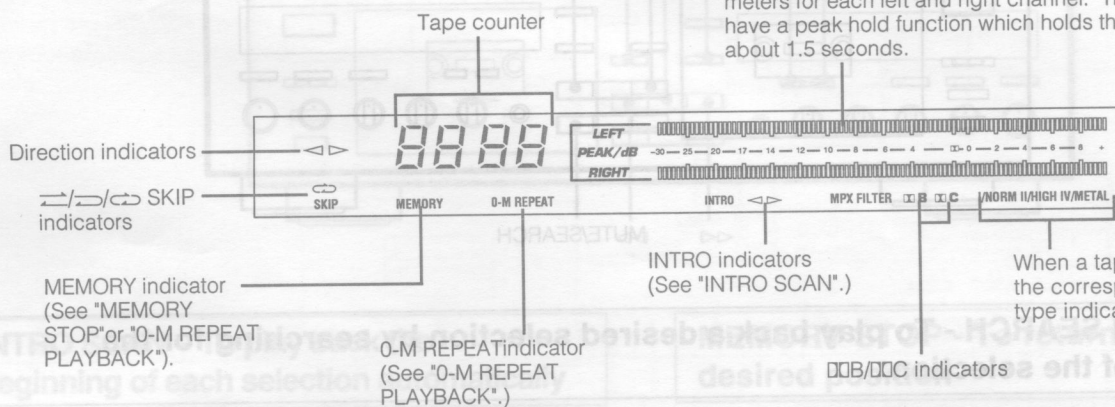
- When the tape running direction is set to ◀, only the reverse side is played back.

◀ SKIP: Both sides of the tape are repeatedly played back (up to 8 times).

- When the tape is fast forwarded or rewound to the end of a side, playback automatically starts from the other side.

In this mode, the blank skip function is automatically added to the auto reverse function. The tape will be fast forwarded to the next selection automatically when an unrecorded section of more than 15 seconds is found.

Display during playback



To fast forward the tape

Press the $\triangleright\triangleright$ button.

To fast rewind the tape

Press the $\triangleleft\triangleleft$ button.

To adjust the volume level

Use the volume control of the amplifier or receiver.

To use headphones for private listening

Insert the headphones plug into the PHONES jack and adjust the volume with LEVEL control.

Tape counter

Use the tape counter as an aid in locating a point on a tape. To set the counter reading to "0000", press the COUNTER RESET button.

To stop playback and remove the cassette tape

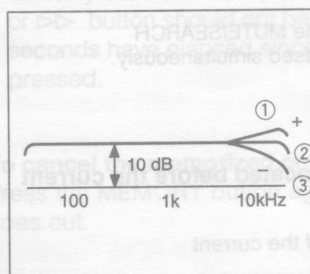
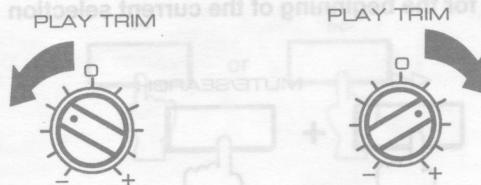
Press the STOP button and then the EJECT button. The cassette compartment comes out and you can remove the cassette tape. After removing it, push in the compartment door until it locks shut.

PLAY TRIM control adjustment

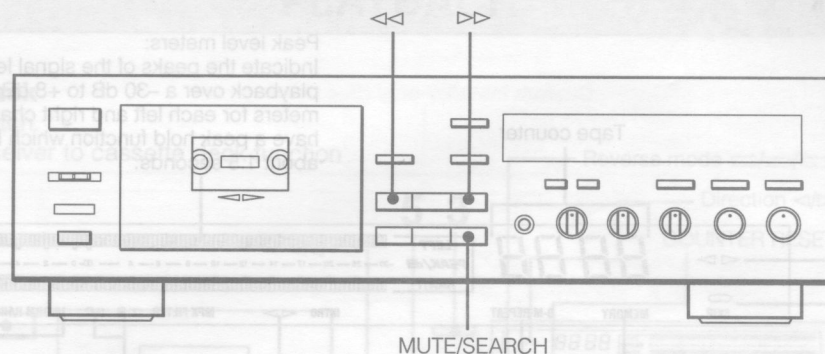
When distortion or the absence of high frequencies is noticeable when playing a tape recorded on another cassette deck, compensate the high frequency response with the PLAY TRIM control.

When distortion is noticeable, attenuate the high frequencies.

When high frequencies are absent, boost the high frequencies.



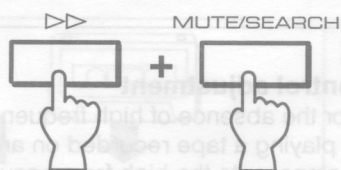
- ① High frequency sound is distorted.
- ② Flat
- ③ High-frequency sound is absent.



SELECTION SEARCH - To play back a desired selection by searching for the beginning of the selection

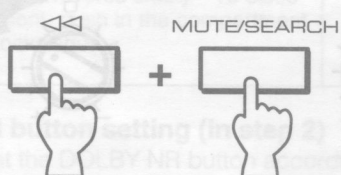
When the direction indicator \triangleright is lit

To search for the next selection



The $\triangleright\triangleright\triangleright$ button and the MUTE/SEARCH button should be pressed simultaneously.

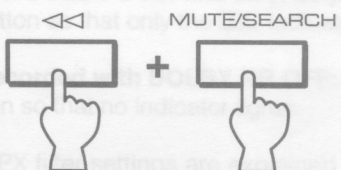
To search for the beginning of the current selection



The $\triangleleft\triangleleft\triangleleft$ button and the MUTE/SEARCH button should be pressed simultaneously.

To search for the selection located before the current selection

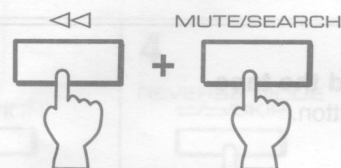
When the beginning of the current selection is played:



The $\triangleleft\triangleleft\triangleleft$ button and the MUTE/SEARCH button should be pressed simultaneously.

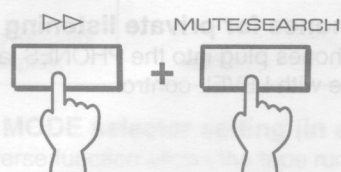
When the direction indicator \triangleleft is lit

To search for the next selection



The $\triangleleft\triangleleft\triangleleft$ button and the MUTE/SEARCH button should be pressed simultaneously.

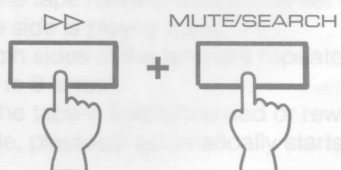
To search for the beginning of the current selection



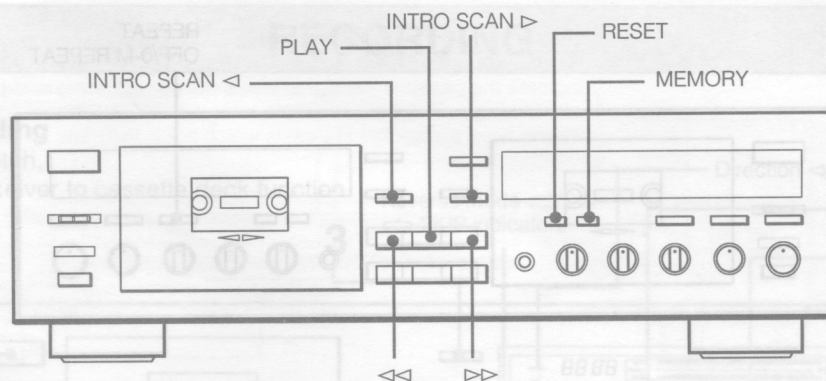
The $\triangleright\triangleright\triangleright$ button and the MUTE/SEARCH button should be pressed simultaneously.

To search for the selection located before the current selection

When the beginning of the current selection is played:

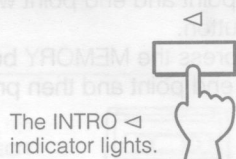


The $\triangleright\triangleright\triangleright$ button and the MUTE/SEARCH button should be pressed simultaneously.



INTRO SCAN - To play back the beginning of each selection automatically

To play back each selection in the reverse direction



To play back each selection in the forward direction



To resume normal playback when the desired selection is found

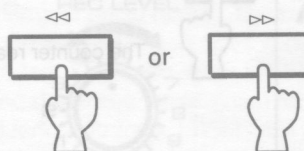


MEMORY STOP - To return to the desired position

Press the MEMORY button at the desired position. The deck memorizes that position and the MEMORY indicator lights.



During fast forwarding or rewinding, the tape will stop at the position where the MEMORY button was pressed. (The tape may stop at the position slightly ahead of the specified position.)



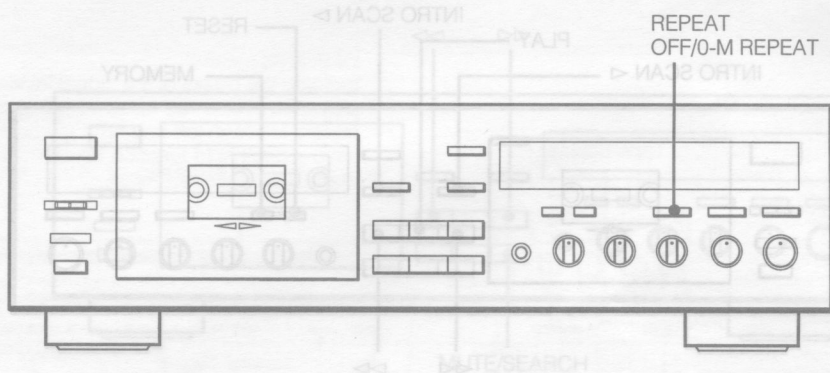
- To carry out the Memory Stop function correctly, the << or >> button should not be pressed until at least 5 seconds have elapsed since the MEMORY button was pressed.

To cancel the memorized counter reading

Press the MEMORY button again. The MEMORY indicator goes out.

Notes on Selection search and Intro scan

- The blank section between selections must be at least 4 seconds.
- With tapes recorded with low level or having excessive noise, these operations may not be carried out.



0-M REPEAT PLAYBACK - To playback a desired section repeatedly (up to 8 times)

1 Press the REPEAT OFF/0-M REPEAT button.

REPEAT
OFF/0-M REPEAT



The 0-M REPEAT indicator lights.

2 Press the RESET button at the beginning of the section you want to play repeatedly.

RESET



The counter reads "0000".

3 Press the MEMORY button at the end of the section.

MEMORY



The MEMORY indicator lights.

The tape is rewound to the point where the RESET button was pressed and then the deck enters playback mode. The deck plays until it reaches the specified end of the section, rewinds to the beginning, and plays again.

Note:

The length between the beginning and end points should be more than 5 seconds.

To change the beginning and end points

When the RESET button is pressed again, the memorized points are canceled and the MEMORY indicator goes out. Specify the desired beginning point and end point with the RESET button and MEMORY button.

To change only the end point, press the MEMORY button once to cancel the memorized end point and then press it again at the desired point.

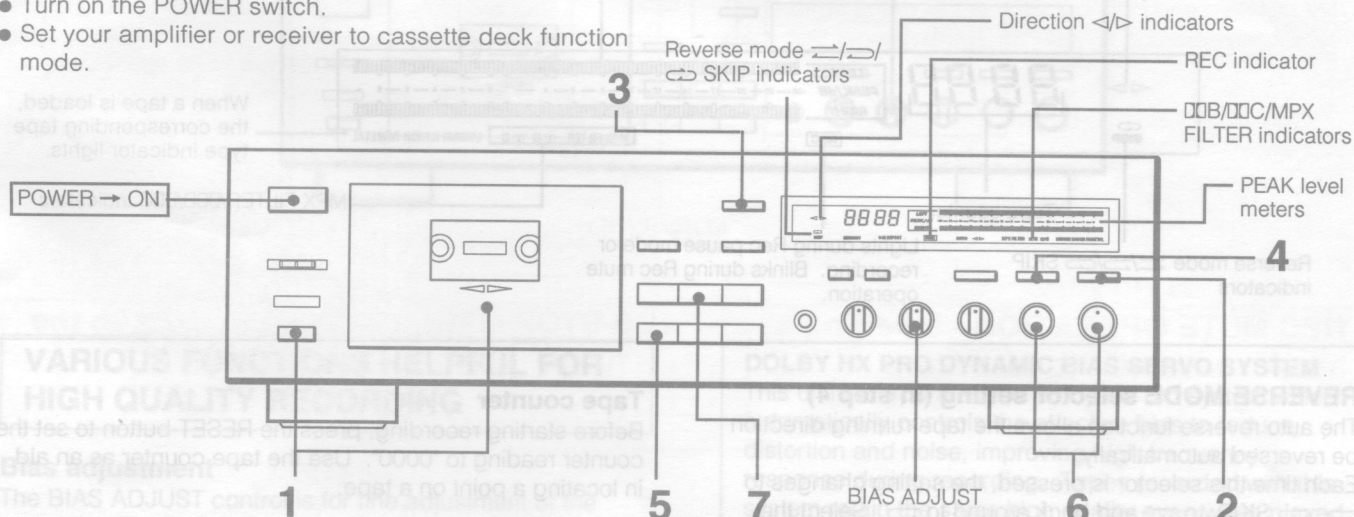
To cancel repeat playback


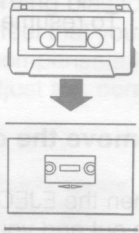




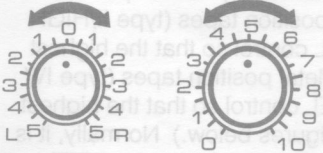

Press the REPEAT OFF/0-M REPEAT button again. The 0-M REPEAT indicator goes out.

RECORDING

Preparation for recording

- Turn on the POWER switch.
- Set your amplifier or receiver to cassette deck function mode.



<div>1</div> <div></div> <div>EJECT</div> <div></div> <div>Insert the cassette with the exposed tape side facing down. (The side facing you is called the forward side and the opposite side is called the reverse side.) To close the compartment, push in the compartment door until it locks shut.</div>	<div>2</div> <div></div> <div>DOLBY NR OFF/DOLBY B/MPX</div> <div>Refer to the description below.</div>	<div>3</div> <div></div> <div>DIRECTION</div> <div>Select the tape running direction. Each time this button is pressed, the tape running direction changes between forward (▷) and reverse (◁) and the corresponding indicator lights on the display.</div>	
<div>4</div> <div></div> <div>REVERSE MODE ↔/SKIP</div> <div>Refer to "REVERSE MODE selector setting".</div>	<div>5</div> <div></div> <div>REC/PAUSE</div> <div>The REC indicator lights on the display and the deck enters the rec pause mode.</div>	<div>6</div> <div></div> <div>BALANCE REC LEVEL</div> <div>Play the program source to be recorded and adjust the recording level and balance. See "Setting the recording level"</div>	<div>7</div> <div></div> <div>PLAY</div> <div>Recording starts.</div>

DOLBY NR button setting (in step 2)

Dolby noise reduction is an extremely effective method of reducing undesirable background hiss on tapes. This unit incorporates both Dolby B NR and the newer Dolby C NR system. Dolby C NR is approximately twice as effective as the earlier Dolby B NR.

Each time the DOLBY NR button is pressed, Dolby NR switches to DOLBY B (MPX OFF), to DOLBY C (MPX OFF), to DOLBY B (MPX ON), to DOLBY C (MPX ON), to OFF and back around to DOLBY B (MPX OFF).

Recording sources other than FM broadcasts with DOLBY NR

With DOLBY B NR:

Press the DOLBY NR button so that only the DOLBY B indicator lights. Make sure that the MPX FILTER indicator is not lit.

With DOLBY C NR:

Press the DOLBY NR button so that only the DOLBY C indicator lights. Make sure that the MPX FILTER indicator is not lit.

Recording an FM broadcast with DOLBY NR

With DOLBY B NR:

Press the DOLBY NR button so that the MPX FILTER and DOLBY B indicators light.

With DOLBY C NR:

Press the DOLBY NR button so that the MPX FILTER and DOLBY C indicators light.

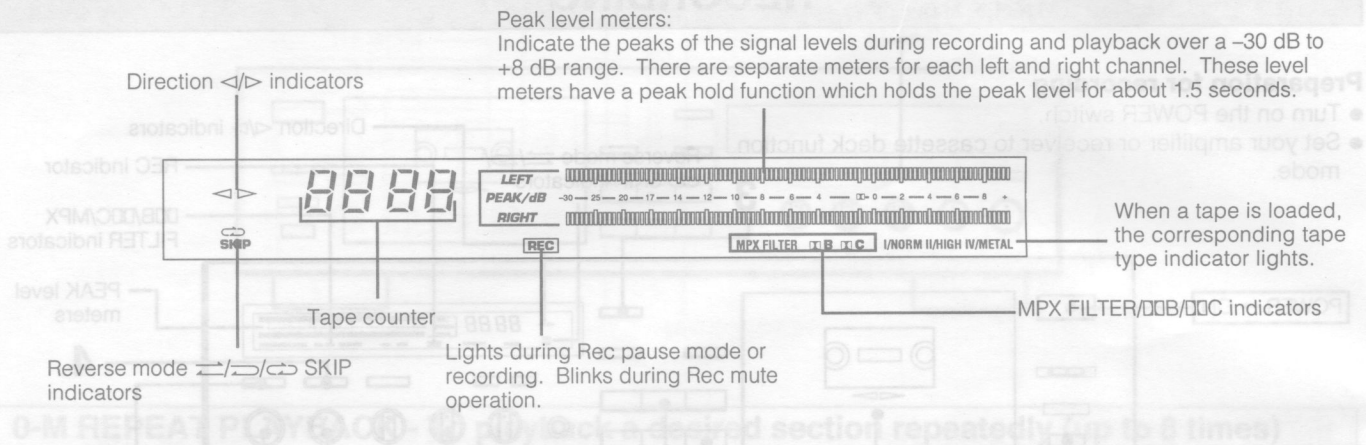
No noise reduction:

Set this button so that no indicator lights.

MPX filter

FM stations transmit a 19 kHz pilot signal in addition to the broadcast program. Sometimes this pilot signal may leak into the audio output depending on the tuner and broadcast conditions. This signal can cause improper operation of the Dolby NR systems. Activating the MPX filter (B TYPE/C TYPE MPX ON settings) will effectively remove the signal.

Display during recording



REVERSE MODE selector setting (in step 4)

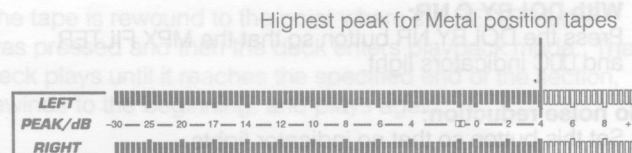
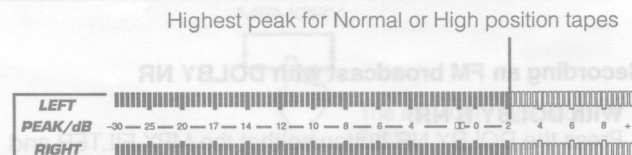
The auto reverse function allows the tape running direction be reversed automatically.

Each time this selector is pressed, the setting changes to </>, </> SKIP, to </> and back around to </>. Select the desired mode.

- </>: When recording of one side of a tape is finished, the deck stops at the end of the tape.
- </> and </> SKIP: Both sides of the tape are recorded. After recording, the deck stops at the end of the tape.
 - When the tape running direction is set to </>, only the reverse side is recorded.

Setting the recording level (in step 6)

Play the loudest passage of the source to be recorded and watch the meter readings. When using Normal position tapes (type I/NORM) or High position tapes (type II/HIGH (CrO₂)), adjust the REC LEVEL control so that the highest peak is +2 dB. When using Metal position tapes (type IV/METAL), adjust the REC LEVEL control so that the highest peak is +4 dB. (Refer to the figures below.) Normally, it is best to adjust the BALANCE control such that the LEFT and RIGHT meter readings are even.



Tape counter

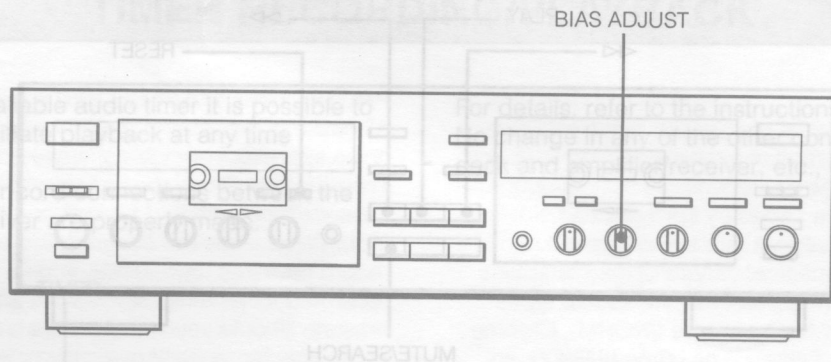
Before starting recording, press the RESET button to set the counter reading to "0000". Use the tape counter as an aid in locating a point on a tape.

To stop recording temporarily

Press the REC/PAUSE button. To resume recording, press the PLAY button.

To stop recording and remove the cassette tape

Press the STOP button and then the EJECT button. The cassette compartment comes out and you can remove the cassette tape. After removing it, push in the compartment door until it locks shut.



VARIOUS FUNCTIONS HELPFUL FOR HIGH QUALITY RECORDING

Bias adjustment

The BIAS ADJUST control is for fine adjustment of the recording bias. Normally, it is not necessary to adjust this control since the built-in Auto Tape Selector automatically adjusts the recording bias for different tape types. However, if you feel that your recording needs further bias adjustment (to compensate for absent or distorted high frequencies), adjust this control to your liking.

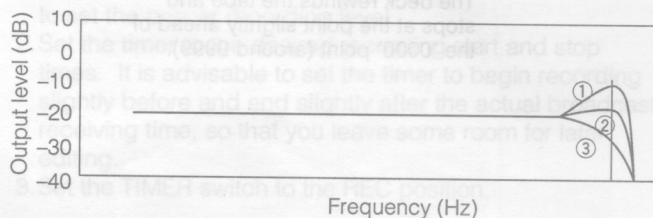
When high frequencies are absent, boost the high frequencies.

BIAS ADJUST



When distortion is noticeable, attenuate the high frequencies.

BIAS ADJUST



- ① Insufficient bias (Distortion is noticeable.)
- ② Optimum bias
- ③ Excessive bias (High frequencies are absent.)

DOLBY HX PRO DYNAMIC BIAS SERVO SYSTEM

This unit incorporates the Dolby HX Pro system which automatically controls the effective bias to reduce distortion and noise, improving high frequency response during recording. Tapes recorded with this system retain the same high quality even when played back on other cassette decks.

Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation, HX Pro originated by Bang & Olufsen.

"DOLBY", the double-D symbol $\square\square$ and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

Timer playback

1. Turn on the amplifier/receiver and adjust the volume and tone controls.
2. Set the input mode selector to the cassette deck.
3. Press the **RECORD** button to start recording.
4. Set the **TIMER** switch to the **ON** position.

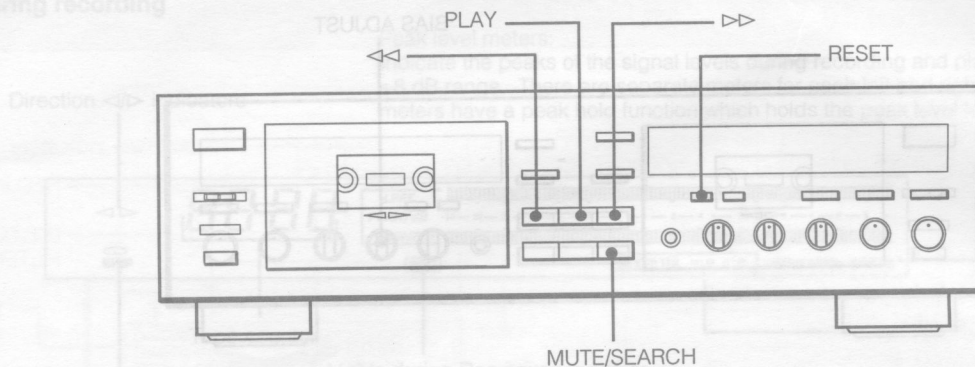
When the direction indicator is lit: When the direction indicator is lit:

During recording, the timer will limit the time to the preset time. At the preset time, the timer will turn off the power to the amplifier/receiver and cassette deck and begin playback. The deck will rewind the tape and stop at the point slightly ahead of the point at which the recording started.

● If the **PLAY** button is pressed during recording, the return operation automatically rewinds the tape to the point where the **PLAY** button was previously pressed.

Note:

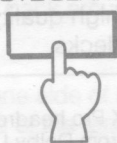
Be sure to set the **TIMER** switch to the **OFF** position when not using the timer features. Otherwise, if the power is turned on with a cassette deck in default status, recording or playback will start. Be especially careful to set this switch to the **OFF** position after recording to prevent erasing the recorded contents.



REC MUTE OPERATION - Inserting a blank space during recording

During recording

MUTE/SEARCH



A 4-second blank interval is automatically recorded on the tape, and then the deck enters Rec/Pause mode. If a blank interval longer than 4 seconds is desired, keep pressing for as long as you want. When the MUTE/SEARCH button is released, the deck enters Rec/Pause mode after making a 4-second blank interval. To resume recording, press the PLAY button.

0-STOP OPERATION - To return to the "0000" point

During recording

RESET

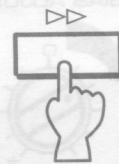


The counter reading returns to "0000" and this point is memorized.

When the direction indicator > is lit:



When the direction indicator < is lit:



The deck rewinds the tape and stops at the point slightly ahead of the "0000" point (around 9999).

REC RETURN OPERATION - To return to the point at which the recording previously started

When the direction indicator > is lit:

During recording



When the direction indicator < is lit:

During recording



The deck rewinds the tape and stops at the point slightly ahead of the point at which the recording started.

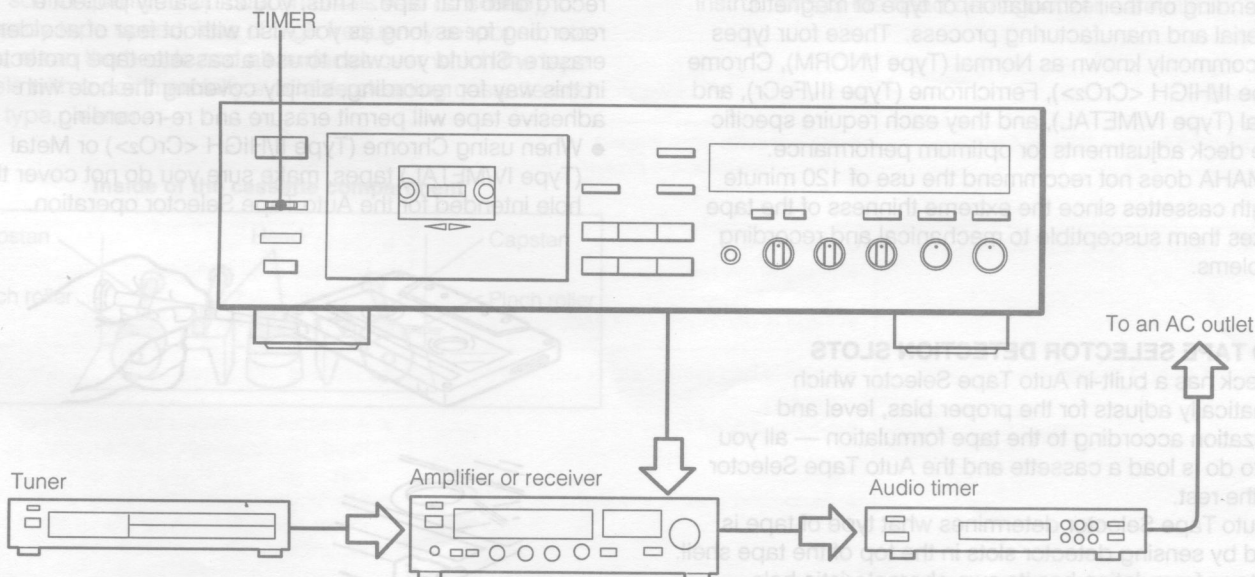
- If the PLAY button is pressed during recording, Rec return operation automatically rewinds the tape to the point where the PLAY button was previously pressed.

TIMER RECORDING/PLAYBACK

With a commercially available audio timer it is possible to make recordings and initiate playback at any time automatically.

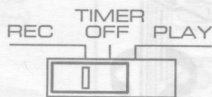
Make sure that all power cord connections between the timer and amplifier/receiver are properly made.

For details, refer to the instructions of your audio timer. No change in any of the other connections between the deck and amplifier/receiver, etc., is necessary.



Timer recording

1. After turning on the power to each component, select the station on your tuner which you want to record and turn down the volume on your amplifier/receiver. This will have no effect on the recording signal level. Remember to set the proper recording level.
2. Set the timer to the desired recording start and stop times. It is advisable to set the timer to begin recording slightly before and end slightly after the actual broadcast receiving time, so that you leave some room for later editing.
3. Set the TIMER switch to the REC position.



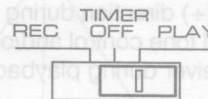
4. The timer will send power to the amplifier/receiver, tuner, and deck at the preset time, turning all the components on and initiating the recording.

Note:

Be sure to set the TIMER switch to the OFF position when not using the timer features. Otherwise, if the power is turned on with a cassette loaded in the deck, recording or playback will start. Be especially careful to set this switch to the OFF position after timer recording to prevent erasing the recorded contents.

Timer playback

1. Turn on the amplifier/receiver and adjust the volume and tone controls.
2. Set the input mode selector of your amplifier/receiver to the cassette deck function mode.
3. Set the timer to the time you wish to start and stop playback.
4. Set the TIMER switch to the PLAY position.



5. At the preset time, the timer will turn power on to the amplifier/receiver and cassette deck and begin playback. It will shut power off at the preset time as well ending playback.

CASSETTE TAPES

CASSETTE TAPES

There are many different types of cassette tapes available. However, they all conform to standard specifications so any brand may be used with the deck.

● Classification of Cassette Tapes by Formulation

Cassette tapes are available in four basic types depending on their formulation, or type of magnetic material and manufacturing process. These four types are commonly known as Normal (Type I/NORM), Chrome (Type II/HIGH <CrO₂>), Ferrichrome (Type III/FeCr), and Metal (Type IV/METAL), and they each require specific tape deck adjustments for optimum performance.

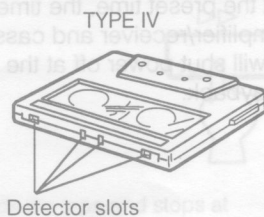
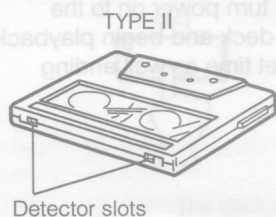
- * YAMAHA does not recommend the use of 120 minute length cassettes since the extreme thinness of the tape makes them susceptible to mechanical and recording problems.

AUTO TAPE SELECTOR DETECTION SLOTS

The deck has a built-in Auto Tape Selector which automatically adjusts for the proper bias, level and equalization according to the tape formulation — all you have to do is load a cassette and the Auto Tape Selector does the rest.

The Auto Tape Selector determines what type of tape is loaded by sensing detector slots in the top of the tape shell. Each tape formulation has its own characteristic hole markings standardized by the tape industry.

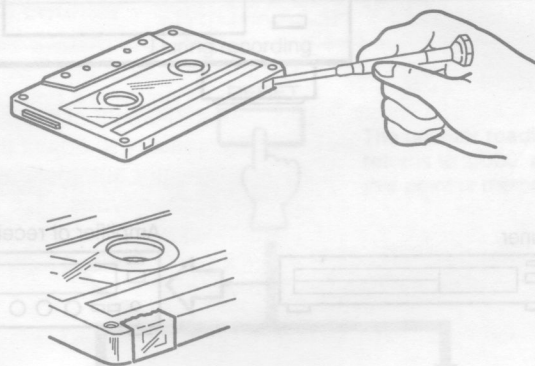
- Early model Metal (Type IV/Metal) tape formulation cassette shells do not have the slots for Auto Tape Selector operation. As a result, early model Metal type tapes recorded on another deck will be played back with the deck at the Chrome (Type II/HIGH <CrO₂>) settings. YAMAHA does not recommend recording with this kind of tape.
- The deck does not have the required setting for Ferrichrome (Type III/FeCr) tape, since this tape formulation is not widely used. Should you use a Ferrichrome tape, it will be recorded and played back at the Normal (Type I/NORM) settings, which will result in an unnatural high frequency emphasis. This effect may be compensated for somewhat by adjusting the BIAS ADJUST to the plus (+) direction during recording, or by using the PLAY TRIM tone control and/or the tone controls of your amplifier/receiver during playback.



PROTECTING YOUR RECORDINGS

All cassette tapes are provided with erasure protection holes to prevent accidental erasure of recorded contents. There is a small tab covering the hole on each side of the cassette, and it should be broken off after recording the tape. Without this tab covering the hole, it is impossible to record onto that tape. Thus, you can safely protect a recording for as long as you wish without fear of accidental erasure. Should you wish to use a cassette tape protected in this way for recording, simply covering the hole with adhesive tape will permit erasure and re-recording.

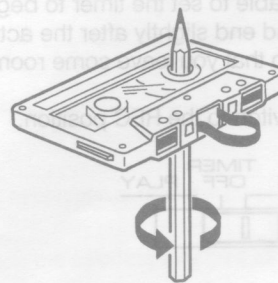
- When using Chrome (Type II/HIGH <CrO₂>) or Metal (Type IV/METAL) tapes, make sure you do not cover the hole intended for the Auto Tape Selector operation.



TAKING UP SLACK IN THE TAPE

As a precaution against tape entanglement and damage, remove any slack in the tape before inserting cassettes into the deck. This is accomplished by inserting a pencil, pen or similar object into one of the spools and gently winding it until all the slack is removed. You do not have to wind it too tightly.

Be careful not to touch the tape part itself. It is very delicate and touching it may damage the tape and its recorded contents.



STORING CASSETTES

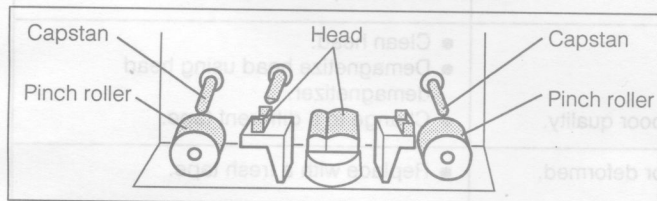
After putting a cassette tape back into its case, store it in a location away from exposure to direct sunlight, humidity, high temperatures, and magnetic fields (away from television sets, speakers, etc.). High temperatures and humidity will damage the tape itself, while exposure to magnetic fields may cause a loss of recorded material. Avoid touching the tape surface with your fingers, since dirt or finger oil will contaminate the deck's heads.

MAINTENANCE

CLEANING OF THE TAPE PATH

Continued high quality performance of your deck is dependent upon periodic cleaning of the heads, capstan, pinch roller, and all surfaces over which the tape travels. Normal use will cause an accumulation of dirt and dust on the heads, capstans, and pinch rollers. This can lead to poor sound quality, drop outs (intervals with no sound), unsteady tape speed, loss of high frequency response, etc. Thus, clean the heads and all surfaces over which the tape travels with a commercially available cleaning cassette and fluid type cleaner.

Inside of the cassette compartment



DEMAGNETIZATION

After 20-30 hours of use, enough residual magnetism will have built up on the heads to cause poor high frequency reproduction. At this time you should use a commercially available head demagnetizer.

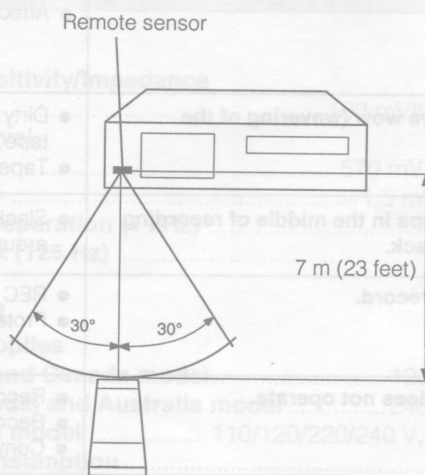
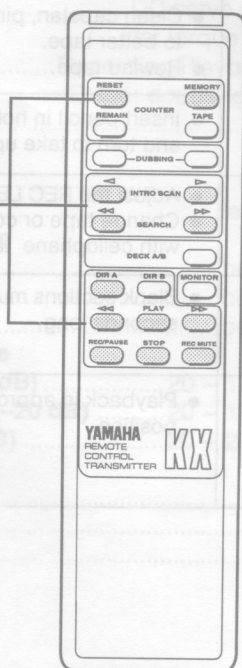
- When demagnetizing the heads, be sure to follow the instructions of the head demagnetizer carefully.

OPTIONAL REMOTE CONTROL TRANSMITTER

With the optional remote control transmitter RS-KX1, you can operate this unit at your listening position. For details, refer to the instruction manual supplied with the remote control transmitter.

REMOTE CONTROL OPERATION RANGE

These shaded buttons control this deck.



TROUBLESHOOTING

If your cassette deck fails to operate normally, check the following table. It lists common operating errors and simple measures which you can take to correct the problem. If it cannot be corrected, or the symptom is not listed, disconnect the deck's power cord and contact your local YAMAHA dealer or service center for help.

Fault	Cause	Cure
Tape doesn't move in recording or playback.	<ul style="list-style-type: none"> Power plug not properly plugged in. Cassette shell is warped or damaged. 	<ul style="list-style-type: none"> Reinsert plug properly. Do not play damaged tapes.
REC/PAUSE button fails to function.	<ul style="list-style-type: none"> No cassette tape loaded. Protective tabs are broken off. 	<ul style="list-style-type: none"> Load a cassette tape. Change tape or cover protective hole with cellophane tape.
Sounds become faint and sometimes inaudible.	<ul style="list-style-type: none"> Head is dirty. Head is magnetized. Tape is damaged or of poor quality. 	<ul style="list-style-type: none"> Clean head. Demagnetize head using head demagnetizer. Change to a different tape.
Recorded sound is distorted.	<ul style="list-style-type: none"> Tape is bad (stretched or deformed, etc.). Cassette shell is warped. Recording level is too high. 	<ul style="list-style-type: none"> Replace with a fresh tape. A warped cassette shell cannot be fixed. Replace with another tape and test. Check input level with signal level meter and use lower rec level when recording.
Tape is playing back, but no sound is heard.	<ul style="list-style-type: none"> Faulty connection between deck and stereo amplifier/receiver. 	<ul style="list-style-type: none"> Check and secure connections.
Excessive noise.	<ul style="list-style-type: none"> Head is dirty. Head is magnetized. Worn out or poor quality tape. Connection(s) improperly made. Affected by external electrical noise. 	<ul style="list-style-type: none"> Clean head. Demagnetize head with head demagnetizer. Change to better tape. Check input and output connections and reinsert properly. Move away from electrical appliances (TV, fluorescent light, electric blanket, etc.).
Excessive wow (wavering of the sound).	<ul style="list-style-type: none"> Dirty capstan, pinch roller, etc., or poor tape. Tape is wound unevenly. 	<ul style="list-style-type: none"> Clean capstan, pinch roller, or change to better tape. Rewind tape.
Tape stops in the middle of recording or playback.	<ul style="list-style-type: none"> Slack tape, or tape spillage wound around capstan. 	<ul style="list-style-type: none"> Insert pencil in hole in cassette shell and turn to take up slack.
Fails to record.	<ul style="list-style-type: none"> REC LEVEL control is set too low. Protective tabs are broken off. 	<ul style="list-style-type: none"> Adjust the REC LEVEL control. Change tape or cover protective hole with cellophane tape.
Search does not operate.	<ul style="list-style-type: none"> Recorded section is too short. Recorded section has low-level portions. Conversation, etc. has been recorded. 	<ul style="list-style-type: none"> Blank sections must be at least 4 seconds long.
High frequencies in the playback sound are emphasized and unpleasant to listen to, and noise level (hiss) is also high.	<ul style="list-style-type: none"> Dolby NR-recorded tape is played back in OFF position. 	<ul style="list-style-type: none"> Playback in appropriate Dolby NR position.

Fault	Cause	Cure
Playback sound is muffled and high frequencies are inaudible.	<ul style="list-style-type: none"> ● Normally-recorded tape is played back in Dolby NR. ● Heads are dirty. ● Heads are magnetized. 	<ul style="list-style-type: none"> ● Playback in OFF position. ● Clean heads and carry out demagnetization with head demagnetizer.
When playing back tapes recorded on other decks, meter deflections are greater (smaller) than when recording.	<ul style="list-style-type: none"> ● Basic levels are different for different cassette decks. 	<ul style="list-style-type: none"> ● This is not a fault.

SPECIFICATIONS

Track Configuration	4 track, 2 channel stereo
Motor	DC servo motor (capstan) Flat torque DC motor (reel)
Head	Recording/Playback: Amorphous Erase: double-gap Ferrite head
Rapid Transport	90 sec. (C-60)
Wow and Flutter	
WRMS	less than 0.08%
W.Peak	less than $\pm 0.15\%$
Signal-to-Noise Ratio	
(Dolby NR off)	better than 58 dB
(Dolby B NR on)	better than 66 dB
(Dolby C NR on)	better than 74 dB
Frequency Response	
Normal tape (-20 dB)	20 ~ 17,000 Hz ± 3 dB
High (CrO ₂) tape (-20 dB)	20 ~ 18,000 Hz ± 3 dB
Metal tape (-20 dB)	20 ~ 20,000 Hz ± 3 dB
Harmonic Distortion	
Normal tape	less than 0.8%
High (CrO ₂) tape	less than 0.8%
Metal tape	less than 0.8%

Input Sensitivity/Impedance

Line 100 mV/50 k-ohms

Output Level

Line 570 mV/1 k-ohms

Phones 1.5 mW/8 ohms

Channel Separation (1 kHz) 40 dB

Cross Talk (125 Hz) 55 dB

GENERAL

Power Supplies

U.S.A. and Canada model 120 V, 60 Hz

U.K. model and Australia model 240 V, 50 Hz

General model 110/120/220/240 V, 50/60 Hz

Power Consumption 16 W

Dimensions (W x H x D) 435 x 131 x 283 mm
(17-1/8" x 5-3/16" x 11-1/8")

Weight 4.9 kg (10 lbs. 13 oz.)

Accessories

Audio connecting cord 2

* Specifications subject to change without notice.

YAMAHA

YAMAHA ELECTRONICS CORPORATION, USA 6660 ORANGETHORPE AVE., BUENA PARK, CALIF. 90620, U.S.A.
 YAMAHA CANADA MUSIC LTD. 135 MILNER AVE., SCARBOROUGH, ONTARIO M1S 3R1, CANADA
 YAMAHA ELECTRONIK EUROPA G.m.b.H. SIEMENSSTR. 22-34, D-2084 RELLINGEN, BEI HAMBURG, F.R. OF GERMANY
 YAMAHA ELECTRONIQUE FRANCE S.A. 17 RUE DES CAMPANULES, LOGNES 77321 MARNE LA VALLEE CEDEX 2 FRANCE
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YAMAHA CORPORATION

VP 83650